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MELLON INSTITUTE OF INDUSTRIAL RESEARCH

UNIVERSITY OF PITTSBURGH

PROGRESS REPORT for the Month ended December 31, 1939

Carbide & Carbon Chemicals Corp. Industrial Fellowship No. 274-3

Subjects under) Single Doses
which report is)
to be indexed)

Single Doses

Results to date on materials not yet included in special reports are tabulated below, except that completed data on these materials appeared in the Annual Report for the year ended November 28, 1939 and are not repeated here.

Incomplete Data

	Rats by Mouth		Guinea Pigs By Mouth	
	Rats Fed	Estimate of LD_{50}	Pigs Fed	Estimate of LD_{50}
[redacted] Dichlorisopropyl Ether		(see Annual)	42	0.45 gm/kg.

Single Skin Applications

The LD_{50} of formaldehyde when applied to guinea pig skin was found to be 0.5 gram/kilo. This figure is calculated on the basis of anhydrous formaldehyde, but applications were made in the form of the commercial 40 per cent solution undiluted, sometimes known as "Formalin."

The Fellow finds considerable objection to the use of the present skin absorption technic on materials which require large doses to kill. The chief objection is that it seems impossible to bring a large volume of a fluid in contact with the guinea pig skin. Most of the fluid remains in the cotton pad at a distance from the skin. For this reason, the Fellow would prefer, in the future, not to test materials by the skin absorption technic when their LD_{50}'s are greater than about 5 grams/kilo. With the present technic, LD_{50}'s above 5 grams/kilo are quite unreliable.

Thirty-Day Doses

Rats which have received "Carbitol" Acetate in their drinking water were killed this month. The gross effects from this material have been negligible. Tissues will be studied.

Rats which are receiving Polyethylene Glycol Molecular Weight 4000 (Wax 4000) have passed the sixtieth day with minor, if any, gross effect from a 16 per cent solution in water. Because of the small effect seen, no animals were killed after 60 days, but all will be continued to at least 90 days.

Eye Applications

In the rabbit eye an excess of castor oil produces no necrosis.

In the rabbit eye 0.001 ml of "Gasflux" produces necrosis. This material is a mixture of Methyl Borate, Acetone, and Methyl Alcohol. A constant boiling mixture of Ethyl Borate and Ethyl Alcohol produces necrosis in a volume of 0.002 ml but not in smaller volumes. This mixture is essentially what is being marketed under the name of "Oxweld" "Brazo" Vapor Flux. Acetone was found to produce necrosis in a volume of 0.002 ml, and Methyl Borate, based on data of about a year ago, in a volume of 0.05 ml.

The above results are not entirely consistent. For instance, about a year ago necrosis was obtained from 0.1 ml of Ethyl Borate constant boiling mixture but not from smaller volumes. This raises the question of how consistent are the results of this rabbit eye test. At present, the Fellow can simply state that the results are based on two applications producing necrosis, and two applications of the next smaller standard

Octyl Alcohol Vapors

The monthly reports of February and March, 1939 gave gross results from eight-hour exposures of animals to a mist produced in one case by bubbling air through Octyl Alcohol maintained at 74° C., and in the second case by bubbling through Octyl Alcohol floating on water at 74° C. Pathological interpretations of tissues from these animals have been received. There was no death. Lungs were slightly congested and one guinea pig out of six showed light cloudy swelling in the kidney. No rats showed injury. These results confirm the statement previously made that single exposures to vapors and mist from hot Octyl Alcohol should

have no effect upon human subjects beyond the eye and nose irritation of the vapors. No eye injury was found, so that nothing more than mild conjunctivitis would be expected in humans from single exposures.

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Henry F. Smyth, Jr.

Henry F. Smyth, Jr.
SENIOR INDUSTRIAL FELLOW

January 6, 1940-mah

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Data produced 12 (Month) 21 (Day) 88 (Year)

Barbara Smith
Camera Operator

Place Syracuse (City) New York (State)

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